

**JP 2004-524720**

Derwent WPI

(c) 2007 The Thomson Corporation. All rights reserved.

0012487421

WPI Acc no: 2002-434594/200246

Related WPI Acc No: 2007-252479

XRPX Acc No: N2002-342099

**Failing connection rescuing method in communication networks, involves continuing the connection at mobile station, when assumed code channels transmitted from sectors of communication network are received**

Patent Assignee: DENSO CORP (NPDE); NIPPONDENSO CO LTD (NPDE)

Inventor: HUNZINGER J F; JASON F H

Patent Family ( 13 patents, 92 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20020045443	A1	20020418	US 2000241268	P	20001017	200246	B
			US 2000248900	P	20001114		
			US 2001978974	A	20011016		
WO 2002033982	A2	20020425	WO 2001US32464	A	20011016	200246	E
AU 200215376	A	20020429	AU 200215376	A	20011016	200255	E
KR 2003057539	A	20030704	KR 2003705354	A	20030416	200377	E
CN 1470136	A	20040121	CN 2001817519	A	20011016	200425	E
JP 2004524720	W	20040812	WO 2001US32464	A	20011016	200453	E
			JP 2002536850	A	20011016		
AU 2002215376	A8	20051013	AU 2002215376	A	20011016	200611	E
US 7133675	B2	20061107	US 2001978974	A	20011016	200673	E
CN 1265655	C	20060719	CN 2001817519	A	20011016	200678	E
KR 593866	B1	20060630	WO 2001US32464	A	20011016	200708	E
			KR 2003705354	A	20030416		
CN 1878336	A	20061213	CN 200610092492	A	20011016	200726	E
CN 1897753	A	20070117	CN 200610100768	A	20011016	200735	E
JP 3948403	B2	20070725	WO 2001US32464	A	20011016	200750	E
			JP 2002536850	A	20011016		

Priority Applications (no., kind, date): US 2000241268 P 20001017; US 2000248900 P 20001114; US 2001978974 A 20011016

## Patent Details

Patent Number	Kind	Lan	Pgs	Draw	Filing Notes	
US 20020045443	A1	EN	30	17	Related to Provisional	US 2000241268
					Related to Provisional	US 2000248900
WO 2002033982	A2	EN				
National Designated States, Original	AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG					

	KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW					
Regional Designated States,Original	AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW					
AU 200215376	A	EN			Based on OPI patent	WO 2002033982
JP 2004524720	W	JA	105		PCT Application	WO 2001US32464
					Based on OPI patent	WO 2002033982
AU 2002215376	A8	EN			Based on OPI patent	WO 2002033982
KR 593866	B1	KO			PCT Application	WO 2001US32464
					Previously issued patent	KR 2003057539
					Based on OPI patent	WO 2002033982
JP 3948403	B2	JA	37		PCT Application	WO 2001US32464
					Previously issued patent	JP 2004524720
					Based on OPI patent	WO 2002033982

#### Alerting Abstract US A1

NOVELTY - The potentially failing connection is detected and several pilots corresponding to the sectors of the communication network are added to the mobile station (MS) (10) active set. Assumed code channels (ACCs) are transmitted from a sector to the MS for rescue. The connection at the MS is continued, when the ACCs are received by the MS.

DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

1. Network operation method;
2. Communication system for enabling communications with mobile users;
3. Communication system for assisting in rescuing; and
4. Mobile station.

USE - In paging systems, satellite, cordless phone, fleet communication systems for preventing loss of signal and dropped connections between wireless terminals used in commercial, military or other applications and wireless communication network.

ADVANTAGE - The procedure is centralized and thus overcomes the efficiency, delay and power control type problems associated with decentralized procedures. The transmission of ACC from a sector minimizes capacity impact of rescue as the network knows its capacity and traffic and coordinates within itself where and when to transmit the ACC.

DESCRIPTION OF DRAWINGS - The figure shows roving mobile station moving amongst different locations between sectors in the wireless communication network.

#### Main Drawing Sheet(s) or Clipped Structure(s)

**Title Terms /Index Terms/Additional Words:** FAIL; CONNECT; RESCUE; METHOD;  
 COMMUNICATE; NETWORK; CONTINUE; MOBILE; STATION; ASSUME; CODE;  
 CHANNEL; TRANSMIT; SECTOR ; RECEIVE

#### Class Codes

International Patent Classification					
IPC	Class Level	Scope	Position	Status	Version Date
H04Q-007/20; H04Q-007/38			Main		"Version 7"
H04Q-0007/00	A	I	L	B	20060101
H04Q-0007/20	A	I	F		20060101
H04Q-0007/20	A	I	F	B	20060101
H04Q-0007/34	A	I	L		20060101
H04Q-0007/36	A	I		R	20060101
H04Q-0007/38	A	I	F	R	20060101
H04Q-0007/38	A	I	F		20060101
H04Q-0007/38	A	I	F	B	20060101
H04Q-0007/00	C	I	L	B	20060101
H04Q-0007/20	C	I	F	B	20060101
H04Q-0007/34	C	I			20060101
H04Q-0007/36	C	I		R	20060101
H04Q-0007/38	C	I	F	R	20060101
H04Q-0007/38	C	I			20060101
H04Q-0007/38	C	I		B	20060101

US Classification, Issued: 455436000, 455450000, 455421000, 455437000, 455436000, 455439000, 455442000 , 455443000, 455444000, 370331000, 370328000, 370332000

File Segment: EPI;

DWPI Class: W01; W02

Manual Codes (EPI/S-X): W01-B05A1; W01-C02A; W02-C03B1; W02-C03C; W02-C05

#### Original Publication Data by Authority

#### Australia

**Publication No.** AU 200215376 A (Update 200255 E)

**Publication Date:** 20020429

**Assignee:** DENSO CORP; JP (NPDE)

**Language:** EN

**Application:** AU 200215376 A 20011016 (Local application)

**Priority:** US 2000241268 P 20001017

US 2000248900 P 20001114

Related Publication: WO 2002033982 A (Based on OPI patent )

Original IPC: H04Q-7/20(A)

Current IPC: H04Q-7/36(R,I,M,EP,20060101,20051008,A) H04Q-

7/36(R,I,M,EP,20060101,20051008,C) H04Q-7/38(R,I,M,JP,20060101,20051220,A,F) H04Q-

7/38(R,I,M,JP,20060101,20051220,C,F)

**Publication No.** AU 2002215376 A8 (Update 200611 E)

Publication Date: 20051013

**Forward link based rescue channel method and apparatus for telecommunication systems**

Assignee: DENSO CORP (NPDE)

Inventor: HUNZINGER J F

Language: EN

Application: AU 2002215376 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Related Publication: WO 2002033982 A (Based on OPI patent )

Original IPC: H04Q-7/20(A)

Current IPC: H04Q-7/20(A)

## China

**Publication No.** CN 1265655 C (Update 200678 E)

Publication Date: 20060719

Assignee: DENSO CORP; JP (NPDE)

Inventor: JASON F H

Language: ZH

Application: CN 2001817519 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Original IPC: H04Q-7/20(I,CN,20060101,A,F)

Current IPC: H04Q-7/20(I,CN,20060101,A,F)

**Publication No.** CN 1470136 A (Update 200425 E)

Publication Date: 20040121

Assignee: DENSO CORP; JP (NPDE)

Language: ZH

Application: CN 2001817519 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Original IPC: H04Q-7/20(A)

Current IPC: H04Q-7/36(R,I,M,EP,20060101,20051008,A) H04Q-

7/36(R,I,M,EP,20060101,20051008,C) H04Q-7/38(R,I,M,JP,20060101,20051220,A,F) H04Q-

7/38(R,I,M,JP,20060101,20051220,C,F)

**Publication No.** CN 1878336 A (Update 200726 E)

Publication Date: 20061213

Assignee: DENSO CORP; JP (NPDE)

Inventor: HUNZINGER J F

Language: ZH

Application: CN 200610092492 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Original IPC: H04Q-7/20(I,CN,20060101,A,F) H04Q-7/20(I,M,98,20060101,C) H04Q-7/36(I,CN,20060101,A,L) H04Q-7/36(I,M,98,20060101,C) H04Q-7/38(I,CN,20060101,A,L) H04Q-7/38(I,M,98,20060101,C)

Current IPC: H04Q-7/20(B,A,I,H,CN,20060101,20061213,A,F) H04Q-7/20(B,I,H,CN,20060101,20061213,C,F)

**Publication No.** CN 1897753 A (Update 200735 E)

Publication Date: 20070117

Assignee: DENSO CORP; JP (NPDE)

Inventor: HUNZINGER J F

Language: ZH

Application: CN 200610100768 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Original IPC: H04Q-7/34(I,CN,20060101,A,L) H04Q-7/34(I,M,98,20060101,C) H04Q-7/38(I,CN,20060101,A,F) H04Q-7/38(I,M,98,20060101,C)

Current IPC: H04Q-7/34(A,I,CN,20060101,A,L) H04Q-7/34(I,M,98,20060101,C) H04Q-7/38(I,CN,20060101,A,F) H04Q-7/38(I,M,98,20060101,C)

## **Japan**

**Publication No.** JP 2004524720 W (Update 200453 E)

Publication Date: 20040812

Language: JA (105 pages)

Application: WO 2001US32464 A 20011016 (PCT Application)

JP 2002536850 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Related Publication: WO 2002033982 A (Based on OPI patent )

Original IPC: H04Q-7/38(A)

Current IPC: H04Q-7/38(A)

**Publication No.** JP 3948403 B2 (Update 200750 E)

Publication Date: 20070725

Assignee: NIPPONDENSO CO LTD (NPDE)

Language: JA (37 pages)

Application: WO 2001US32464 A 20011016 (PCT Application)

JP 2002536850 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Related Publication: JP 2004524720 A (Previously issued patent)

WO 2002033982 A (Based on OPI patent )  
Original IPC: H04Q-7/38(B,I,H,JP,20060101,20070705,A,F) H04Q-7/38(B,I,M,98,20060101,20070705,C)  
Current IPC: H04Q-7/38(B,I,H,JP,20060101,20070705,A,F) H04Q-7/38(B,I,M,98,20060101,20070705,C)

## **Korea**

**Publication No.** KR 2003057539 A (Update 200377 E)  
**Publication Date:** 20030704  
**Assignee:** DENSO CORP (NPDE)  
**Language:** KO  
**Application:** KR 2003705354 A 20030416 (Local application)  
**Priority:** US 2000241268 P 20001017  
US 2000248900 P 20001114  
**Original IPC:** H04Q-7/20(A) H04Q-7/20(A)  
**Current IPC:** H04Q-7/20(A) H04Q-7/20(A)

**Publication No.** KR 593866 B1 (Update 200708 E)  
**Publication Date:** 20060630  
**Assignee:** DENSO CORP (NPDE)  
**Inventor:** HUNZINGER J F  
**Language:** KO  
**Application:** WO 2001US32464 A 20011016 (PCT Application)  
KR 2003705354 A 20030416 (Local application)  
**Priority:** US 2000241268 P 20001017  
US 2000248900 P 20001114  
**Related Publication:** KR 2003057539 A (Previously issued patent)  
WO 2002033982 A (Based on OPI patent )  
**Original IPC:** H04Q-7/20(B,I,H,KR,20060101,20030627,A,F) H04Q-7/20(B,I,M,98,20060101,20030627,C,F)  
**Current IPC:** H04Q-7/20(B,I,H,KR,20060101,20030627,A,F) H04Q-7/20(B,I,M,98,20060101,20030627,C,F)

## **United States**

**Publication No.** US 20020045443 A1 (Update 200246 B)  
**Publication Date:** 20020418  
**Forward link based rescue channel method and apparatus for telecommunication systems**  
**Assignee:** DENSO CORPORATION, US (NPDE)  
**Inventor:** Hunzinger, Jason F., Carlsbad, CA, US  
**Agent:** Glenn M. Kubota, Morrison & Foerster LLP, 35th Floor, 555 W. 5th Street, Los Angeles, CA, US  
**Language:** EN (30 pages, 17 drawings)  
**Application:** US 2000241268 P 20001017 (Related to Provisional)  
US 2000248900 P 20001114 (Related to Provisional)

US 2001978974 A 20011016 (Local application)

Original IPC: H04Q-7/20(A)

Current IPC: H04Q-7/36(R,A,I,M,EP,20060101,20051008,A) H04Q-7/36(R,I,M,EP,20060101,20051008,C)

Original US Class (secondary): 455436 455450 455421

Original Abstract: A forward rescue procedure (FRP) for preventing loss of signal and dropped connections between a mobile station and the infrastructure in a wireless telecommunications network is disclosed. The FRP allows wireless systems to recover from forward link failures at the mobile station that would otherwise result in dropped connections. Examples of failure scenarios that can be overcome using the FRP include forward link Layer 2 acknowledgement failures and loss of forward link signal due to a fade that causes loss of signal for a period of time exceeding a threshold value. In response to a potential connection drop situation, a mobile station will autonomously add base station pilot channels to the active set of its rake receiver in order to rescue the connection in danger of dropping. Concurrently, the wireless network infrastructure will initiate transmission on alternative forward link channels that are likely to be monitored by the mobile station during an FRP. If the same channels are monitored by the MS and transmitted on by the infrastructure, the connection in danger of dropping can be rescued.

Claim: What is claimed is:

1. 1. In a communications network having a plurality of sectors and a mobile station (MS) having a potentially failing connection, the MS including a MS active set, a method for rescuing the potentially failing connection, comprising:
  - detecting the potentially failing connection;
  - adding one or more pilots to the MS active set, each pilot corresponding to one of the plurality of sectors;
  - determining one or more assumed code channels (ACCs) for use in the rescue;
  - transmitting one of the ACCs from at least one of the plurality of sectors;
  - at the MS, searching for one or more ACCs from the sectors corresponding to the pilots in the MS active set;
  - at the MS, discovering one or more ACCs are receivable from at least one of the plurality of sectors; and
  - continuing the connection at the MS when the one or more receivable ACCs are discovered.

**Publication No.** US 7133675 B2 (Update 200673 E)

**Publication Date:** 20061107

**Forward link based rescue channel method and apparatus for telecommunication systems**

**Assignee:** Denso Corporation, Kariya, JP (NPDE)

**Hunzinger, Jason F.**, Carlsbad, CA, US **Residence:** US

**Inventor:** Hunzinger, Jason F., Carlsbad, CA, US **Residence:** US

**Agent:** Morrison & Foerster LLP

**Language:** EN

**Application:** US 2001978974 A 20011016 (Local application)

**Original IPC:** H04Q-7/00(B,I,H,US,20060101,20061107,A,L) H04Q-7/20(B,I,H,US,20060101,20061107,A,F)

**Current IPC:** H04Q-7/00(B,I,H,US,20060101,20061107,A,L) H04Q-7/00(B,I,H,US,20060101,20061107,C,L) H04Q-7/20(B,I,H,US,20060101,20061107,A,F) H04Q-7/20(B,I,H,US,20060101,20061107,C,F) H04Q-7/36(R,I,M,EP,20060101,20051008,A) H04Q-

7/36(R,I,M,EP,20060101,20051008,C)

Original US Class (secondary): 455437 455436 455439 455442 455443 455444 370331 370328 370332

Original Abstract: A forward rescue procedure (FRP) for preventing loss of signal and dropped connections between a mobile station and the infrastructure in a wireless telecommunications network is disclosed. The FRP allows wireless systems to recover from forward link failures at the mobile station that would otherwise result in dropped connections. Examples of failure scenarios that can be overcome using the FRP include forward link Layer 2 acknowledgement failures and loss of forward link signal due to a fade that causes loss of signal for a period of time exceeding a threshold value. In response to a potential connection drop situation, a mobile station will autonomously add base station pilot channels to the active set of its rake receiver in order to rescue the connection in danger of dropping. Concurrently, the wireless network infrastructure will initiate transmission on alternative forward link channels that are likely to be monitored by the mobile station during an FRP. If the same channels are monitored by the MS and transmitted on by the infrastructure, the connection in danger of dropping can be rescued.

Claim: What is claimed is:

1. 1. In a mobile station (MS), a method for continuing a connection between the MS and a network, comprising:
  - detecting an acknowledgement failure, wherein the acknowledgement failure is detected when the MS has not received an acknowledgement to a message sent by the MS after a certain number of retransmissions of the message by the MS;
  - disabling a transmitter of the MS when the acknowledgement failure is detected; and
  - initiating a call rescue handoff after disabling the transmitter;
  - wherein the call rescue handoff includes
    - autonomously adding a pilot corresponding to a rescue channel to an active set of the MS,
    - enabling the transmitter after adding the pilot to the active set,
    - monitoring the rescue channel for good frames, and
    - continuing the connection when the good frames are received; and
  - wherein the acknowledgement failure is determined by detecting a Layer 2 acknowledgement failure.

## WIPO

Publication No. WO 2002033982 A2 (Update 200246 E)

Publication Date: 20020425

**FORWARD LINK BASED RESCUE CHANNEL METHOD AND APPARATUS FOR TELECOMMUNICATION SYSTEMS**

**PROCEDE ET APPAREIL A CANAL DE SECOURS EN LIAISON AVAL POUR SYSTEMES DE TELECOMMUNICATION**

Assignee: *(except US)* DENSO CORPORATION, 1-1, Showa-cho, Kariya-shi, Aichi-ken 448-8661, JP Residence: JP Nationality: JP (NPDE)

*(only US)* HUNZINGER, Jason, F., 3425 Calle Del Sur, Carlsbad, CA 92009, US Residence: US Nationality: CA

Inventor: HUNZINGER, Jason, F., 3425 Calle Del Sur, Carlsbad, CA 92009, US Residence: US

Nationality: CA

Agent: KUBOTA, Glenn, M., Morrison & Foerster LLP, Suite 3500, 555 W. Fifth Street, Los Angeles, CA 90013-1024, US

Language: EN

Application: WO 2001US32464 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Designated States: (National Original) AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

(Regional Original) AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW

Original IPC: H04Q(A)

Current IPC: H04Q-7/36(R,A,I,M,EP,20060101,20051008,A) H04Q-

7/36(R,I,M,EP,20060101,20051008,C) H04Q-7/38(R,I,M,JP,20060101,20051220,A,F) H04Q-7/38(R,I,M,JP,20060101,20051220,C,F)

Original Abstract: A forward rescue procedure (FRP) for preventing loss of signal and dropped connections between a mobile station and the infrastructure in a wireless telecommunications network is disclosed. The FRP allows wireless systems to recover from forward link failures at the mobile station that would otherwise result in dropped connections. Examples of failure scenarios that can be overcome using the FRP include forward link Layer 2 acknowledgement failures and loss of forward link signal due to a fade that causes loss of signal for a period of time exceeding a threshold value. In response to a potential connection drop situation, a mobile station will autonomously add base station pilot channels to the active set of its rake receiver in order to rescue the connection in danger of dropping. Concurrently, the wireless network infrastructure will initiate transmission on alternative forward link channels that are likely to be monitored by the mobile station during an FRP. If the same channels are monitored by the MS and transmitted on by the infrastructure, the connection in danger of dropping can be rescued.

L'invention concerne une procedure de secours aval (FRP) permettant d'eviter toute perte de signal ou coupure de connexion entre une station mobile et l'infrastructure d'un reseau de telecommunications sans fil. Cette procedure permet aux systemes sans fil de retablir la ligne suite a des defaillances de liaison aval dans une station mobile, entrainant, dans le cas contraire, des coupures de connexions. Cette procedure permet de resoudre certains scenarios de defaillances, y compris les defaillances relatives aux accusés de reception de couche de liaison de niveau 2 aval et les pertes de signal de liaison aval dues a un evanouissement, entrainant une perte de signal pendant une duree depassant une valeur seuil. En reponse a une situation de coupure de connexion potentielle, une station mobile ajoute de facon autonome des canaux pilotes de station de base a l'ensemble actif de son recepteur Rake afin de sauver la connexion risquant d'etre coupee. En parallele, l'infrastructure du reseau sans fil lance la transmission sur des canaux de liaison aval differents susceptibles d'etre controlees par la station mobile durant la procedure de secours aval. Si les memes canaux sont controles par la station mobile (MS) et transmis par ladite infrastructure, la connexion risquant d'etre coupee peut etre retablie.